DETAILED ACTION

Applicant's arguments filed June 15, 2009 have been fully considered but they are not persuasive.

Claims 1-13, 15, 21 and 27 have been canceled. New claims 29-34 have been added. Thus claims 14, 16-20, 22-26 and 28-34 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 28 and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This rejection is directly related to the amendment to claim 28 changing "below" to -- above -- in the last line of the claim. As now amended, the claim requires a "slow leak of refrigerant when the rupture disk is ruptured and when the pressure of the refrigerant is above the second predetermined pressure". This does not appear to be capable of happening as recited in that the "second predetermined pressure" is that pressure which causes the pressure relief valve to open. See claim 28, lines 6-8. Thus at the "second predetermined pressure" the relief valve is open. Thus refrigerant will simply pass through the open relief valve and not flow at a "slow leak" through an

otherwise closed valve via a leak path in the valve. On thorough review of the specification as filed, there lacks any disclosure of the refrigerant flowing through an open relief valve and in a "slow leak" manner, via a leak path, also through the open relief valve as is now recited in the claim. For the purpose of the rejection below, the recitation "above" in line 12 is taken to mean -- below -- as originally presented.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25 and 29-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 recites the limitation "the pressure relief valve" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 25 also recites the limitation "the rupture disk" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claims 29-34 each recite the limitation "the defined leakage" in the last line of each claim. There is insufficient antecedent basis for this limitation in the claim and is taken to mean, for the purposes below, -- the predetermined leakage --.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14, 16-20, 22, 24, 26, 28-31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albertson et al. (U. S. Pat. No. 5,577,389) in view of Weber (U. S. Pat. No. 4,633,681).

The patent to Albertson et al. discloses a "compressor (inherent in the refrigeration circuit), comprising: a safety device (shown in figures 1 and 2 at 9), for limiting high pressure within a chamber (the chamber at conduit which is ultimately fluidly connected to the inherent compressor of the refrigerant circuit) of the compressor, comprising a rupture disk (17) and a pressure relief valve (27), the rupture disk (17) and the pressure relief valve (27) forming a region (volume 20) there-between, the rupture disk (17) having a first side (the side of conduit 15, facing arrow Y) connected to the compressor chamber and a second side (the side facing conduit 16 and volume 20) connected to the region (20), the rupture disk (17) hermetically sealing the chamber (within conduit 15) from the region (20) until a pressure of the compressor chamber exceeds a predetermined level (such as the level required to rupture disk 17), the pressure relief valve (27)… (is) configured to allow a … release of the system pressure after the pressure of the compressor chamber exceeds the predetermined level (e.g. the burst pressure of disk 17)" as recited in claim 14.

Thus the patent to Albertson et al. discloses all the claimed features with the exception of having "a predetermined leakage of atmospheric pressure into the region

while the pressure of the compressor chamber is below the predetermined level" as well as discussion of whether or not relief valve vents in a "slow" manner.

The patent to Webber discloses that it is known in the art to employ in a check valve device used in refrigeration circuits, as shown in figure 2 for example, which includes a fluid leak passage 22, 34 located within either valve seat 20, 32, respectively, which when the valve head at ball 18 is seated at either seat 20, 32, fluid is allowed to pass through the otherwise closed valve element for the purpose of permitting fluid to pass an otherwise closed check valve element thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Albertson et al. a leak passage, located at the junction of the valve head and seat, in the check valve device 27 of Albertson et al. for the purpose of permitting fluid to pass an otherwise closed check valve element thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction as recognized by Webber.

Regarding claim 16, in Albertson et al., "the rupture disk (17) and the pressure relief valve (27) are arranged in series" as recited.

Regarding claim 17, in Albertson et al., "the compressor chamber is an exhaust chamber (the inlet to the device of Albertson et al. at 15 is connected to the "exhaust chamber" of the inherent compressor), and wherein the rupture disk (17) is pressurized on one side (at 15) with high pressure from the exhaust chamber and on the other side

with the atmospheric pressure" when, as taught by Webber, the relief valve 27 includes a leak passage.

Regarding claim 18, in Albertson et al., "the pressure relief valve (27) is configured downstream of the rupture disk (17) from a high pressure side" as recited.

Regarding claim 19, Albertson et al., as modified by Webber, discloses the claimed invention except for "the pressure relief valve (being) configured to open at a lower opening pressure than a bursting pressure of the rupture disk.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the spring force of the relief valve 27 of Albertson et al., since it has been held that where the general conditions of a claim are disclosed as here in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 20, in Albertson et al., "the pressure relief valve (27) is configured to vent a refrigerant of the (inherent) compressor to the atmosphere" as recited.

Regarding claim 22, in Albertson et al., as modified by Webber, "the predetermined leakage (as a result of adopting a leak passage in the relief valve 27 of Albertson et al. as taught by Webber) is sufficient to prevent a pressure build up in the space (volume 20 of Albertson et al.) when the rupture disk (17) is intact" as recited.

Regarding claim 24, in Albertson et al., as modified by Webber, "the pressure relief (27 of Albertson et al.) valve comprises a valve seat, a valve piston, and further comprises at least one of a bypass groove, a bypass bore, and surface roughness or regularity at one of the valve seat and valve piston for realizing the defined leakage". As taught by Webber, the "bypass groove" would be located in the "seat" as recited.

Regarding claim 26, in Albertson et al., as modified by Webber, "the pressure relief valve (27 of Albertson et al.) is configured to slowly release a residual refrigerant of the compressor through a predefined leak (as taught by Webber) in response to the pressure in the air-conditioning system dropping below a set pressure", the "set pressure" being that at which relief valve 27 opens, as recited.

Regarding claim 28, the device of Albertson et al., as modified by Webber, discloses a "safety device (generally taught by Albertson et al.) for a compressor in an air-conditioning system of a motor vehicle, the safety device comprising: a rupture disk (17, Albertson et al.) in contact with a refrigerant of the air-conditioning system and configured to rupture when a pressure of the refrigerant exceeds a first predetermined pressure; and a pressure valve (relief valve 27) disposed in a closed position downstream of the rupture disk (17), and configured to open at a second predetermined pressure lower (based on the spring force of valve 27) than the first predetermined pressure so as to release refrigerant in the event of a rupture of the rupture disk (17), a predetermined leak (as taught by Webber) being associated with the pressure valve (27) in the closed position so as to allow atmospheric pressure to contact a downstream side of the rupture disk (17) when the rupture disk (17) is intact and to allow a slow leak of the refrigerant when the rupture disk (17) is ruptured and when the pressure of the refrigerant is (below) the second predetermined pressure", the "second predetermined pressure" being that at which the relief valve opens 27, as recited.

Regarding claims 29 and 30, in Webber at column 6, lines 5962 there is disclosure that:

"Materials other than steel or copper can be substituted such as other metals and certain plastics."

The disclosed “certain plastics” are considered to at least include “an elastomer” as recited in claims 29 and 30. as such the patent to Webber disclosed employing an “elastomer” as the material for valve seat(s) 20, 32. By inclusion of the leak passage 22, 34 in the seating surface as taught by Webber, the resulting combination would in fact include an “elastomer seal” at the seat of the relief valve 27 of Albertson et al.

Regarding claim 31, in Albertson et al., as modified by Webber, “the pressure relief valve (27 of Albertson et al.) comprises a valve seat, a valve piston (head), and further comprises a bypass groove (as taught by Webber) at one of the valve seat and valve piston for providing the defined leakage”, here at the "seat” as taught by Webber.

Regarding claim 34, in Albertson et al., as modified by Webber, “the pressure relief valve (27 of Albertson et al.) comprises a valve seat, a valve piston (head), and further comprises surface regularity (notch groove as taught by Webber) at one of the valve seat and valve piston for providing the defined leakage” here at the "seat” as taught by Webber.

Claim 14 is further, and claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albertson et al. (U. S. Pat. No. 5,577,389) in view of Szwargulski (U. S. Pat. No. 3,520,330).

The patent to Albertson et al. discloses a “compressor (inherent in the refrigeration circuit), comprising: a safety device (shown in figures 1 and 2 at 9), for limiting high pressure within a chamber (the chamber at conduit which is ultimately fluidly connected to the inherent compressor of the refrigerant circuit) of the compressor, comprising a rupture disk (17) and a pressure relief valve (27), the rupture disk (17) and the pressure relief valve (27) forming a region (volume 20) there-between, the rupture disk (17) having a first side (the side of conduit 15, facing arrow Y) connected to the compressor chamber and a second side (the side facing conduit 16

and volume 20) connected to the region (20), the rupture disk (17) hermetically sealing the chamber (within conduit 15) from the region (20) until a pressure of the compressor chamber exceeds a predetermined level (such as the level required to rupture disk 17), the pressure relief valve (27)… (is) configured to allow a … release of the system pressure after the pressure of the compressor chamber exceeds the predetermined level (e.g. the burst pressure of disk 17)" as recited in claim 14.

Thus the patent to Albertson et al. discloses all the claimed features with the exception of having "a predetermined leakage of atmospheric pressure into the region while the pressure of the compressor chamber is below the predetermined level" as well as discussion of whether or not relief valve vents in a "slow" manner.

The patent to Szwargulski discloses, explicitly in figures 1 and 2 for example, that it is known in the art to employ, in a relief valve 14 located in a fluid conduit of no particular utility other than the conduction of fluid, a leak passage in the form of a porous valve head for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Albertson et al. a porous valve head in the relief valve 27 for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction as recognized by Szwargulski.

Regarding claim 23, in Albertson et al., as modified by Szwargulski, “the pressure relief (27 of Albertson et al.) valve includes a valve seat and a valve piston (head), wherein at least one of the valve seat and the valve piston (e.g. the “piston" or valve head) includes a porous material (as taught by Szwargulski) for providing the predetermined leakage” as recited.

Claim 14 is further, and claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albertson et al. (U. S. Pat. No. 5,577,389) in view of Groat (U. S. Pat. No. 2,451,385).

The patent to Albertson et al. discloses a “compressor (inherent in the refrigeration circuit), comprising: a safety device (shown in figures 1 and 2 at 9), for limiting high pressure within a chamber (the chamber at conduit which is ultimately fluidly connected to the inherent compressor of the refrigerant circuit) of the compressor, comprising a rupture disk (17) and a pressure relief valve (27), the rupture disk (17) and the pressure relief valve (27) forming a region (volume 20) there-between, the rupture disk (17) having a first side (the side of conduit 15, facing arrow Y) connected to the compressor chamber and a second side (the side facing conduit 16 and volume 20) connected to the region (20), the rupture disk (17) hermetically sealing the chamber (within conduit 15) from the region (20) until a pressure of the compressor chamber exceeds a predetermined level (such as the level required to rupture disk 17), the pressure relief valve (27)… (is) configured to allow a … release of the system pressure after the pressure of the compressor chamber exceeds the predetermined level (e.g. the burst pressure of disk 17)” as recited in claim 14.

Thus the patent to Albertson et al. discloses all the claimed features with the exception of having “a predetermined leakage of atmospheric pressure into the region

while the pressure of the compressor chamber is below the predetermined level" as well as discussion of whether or not relief valve vents in a "slow" manner.

The patent to Groat discloses, explicitly in figure 2 for example, that it is known in the art to employ, in a relief valve at 24 located in a refrigerant conducting conduit, a leak passage in the form of a passage 25 located in the valve head 24 of the valve for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Albertson et al. a valve head having a leak passages located in the valve head in the relief valve 27 for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction as recognized by Groat.

Regarding claim 32, in Albertson et al., as modified by Groat, "the pressure relief valve (27 of Albertson et al.) comprises a valve seat, a valve piston (head), and further comprises a bypass bore at one of the valve seat and valve piston for providing the defined leakage", here the valve piston or head includes a bore as taught by Groat.

Claim 14 is further, and claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albertson et al. (U. S. Pat. No. 5,577,389) in view of Mathews et al. (U. S. Pat. No. 3,883,030).

The patent to Albertson et al. discloses a "compressor (inherent in the refrigeration circuit), comprising: a safety device (shown in figures 1 and 2 at 9), for limiting high pressure within a chamber (the chamber at conduit which is ultimately fluidly connected to the inherent compressor of the refrigerant circuit) of the compressor, comprising a rupture disk (17) and a pressure relief valve (27), the rupture disk (17) and the pressure relief valve (27) forming a region (volume 20) there-between, the rupture disk (17) having a first side (the side of conduit 15, facing arrow Y) connected to the compressor chamber and a second side (the side facing conduit 16 and volume 20) connected to the region (20), the rupture disk (17) hermetically sealing the chamber (within conduit 15) from the region (20) until a pressure of the compressor chamber exceeds a predetermined level (such as the level required to rupture disk 17), the pressure relief valve (27)… (is) configured to allow a … release of the system pressure after the pressure of the compressor chamber exceeds the predetermined level (e.g. the burst pressure of disk 17)" as recited in claim 14.

Thus the patent to Albertson et al. discloses all the claimed features with the exception of having "a predetermined leakage of atmospheric pressure into the region while the pressure of the compressor chamber is below the predetermined level" as well as discussion of whether or not relief valve vents in a "slow" manner.

The patent to Mathews et al. discloses, explicitly in figures 4 and 5 for example, that it is known in the art to employ, in a relief valve at 43 located in a fluid conducting conduit, a leak passage in the form of " a surface roughness" at score or texture 48 of the valve head 43 for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the

upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Albertson et al. a valve head at relief valve 27 having a leak passages located on the valve head in the form of a score or texture, i.e. “surface roughness” for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage, buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction as recognized by Mathews et al.

Regarding claim 33, in Albertson et al. as modified by Mathews et al. “the pressure relief valve (27 of Albertson et al.) comprises a valve seat, a valve piston (head), and further comprises surface roughness at one of the valve seat and valve piston for providing the defined leakage” here a "surface roughness" in the form of scores or a texture on the valve head as taught by Mathews et al.

Allowable Subject Matter

Claim 25 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Response to Arguments

In response to applicants remarks as they may apply, the argument that:

> “it would not have been obvious to one of ordinary skill in the art to modify the conventional pop-off relief valve of Albertson with the carburetor choke

> valve of Szwargulski. Clearly these two valves are very different and one of skill in the art would not ordinarily substitute one for the other. Nor does the Office Action provide any reason or motivation why one of ordinary skill in the art would have substituted the Szwargulski carburetor choke valve for the conventional pop-off relief valve of Albertson"

is believed not well taken.

Firstly, although Szwargulski does in fact disclose the combination of a check valve used with a carburetor, in figures 1 and 2 the check valve alone is disclosed. Note in particular at column 2, line3s 36-37, Szwargulski discloses "A particular application of a porous check valve is illustrated in figure 3." As set forth in the disclosure of Szwargulski, the device of figures 1 and 2 is a check valve device in a fluid conduit of no particular utility other than the conduction of fluid in a conduit. such a check valve is of no meaningful difference than the pressure relief/check valve 27 of Albertson et al.

Secondly, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, each of the secondary references to Webber, Szwargulski, Groat and Mathews et al. all teach the employment of a leak passage either at the heat and seat cooperating face(s) as in Webber, as a porous valve head as in Szwargulski, as a passage in the valve head as in Groat, as a "surface roughness" on the valve head as in Mathews et al. for the purpose of allowing limited fluid flow across the otherwise closed relief valve thus allowing for a slower, relative to a valve element which does not have a leak passage,

buildup of pressure necessary to open the closed valve in the upstream passage and to allow for downstream pressure to bleed across the otherwise closed valve towards the upstream direction.

Lastly, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN RIVELL whose telephone number is (571) 272-4918. The examiner can normally be reached on Mon.-Fri. from 6:00am-2:30pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Rivell/
John Rivell
Primary Examiner
Art Unit 3753